IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims

1-28 (Canceled)

29. (New) An information transmitting apparatus for transmitting a plurality of signals via a transmission channel after multiplexing them, wherein the plurality of signals comprise a video signal, an audio signal and an electronic program guide (EPG) signal, the apparatus comprising:

video encoding means for encoding the video signal;

audio encoding means for encoding the audio signal;

EPG data generating means for generating EPG data;

a schedule database defining, with respect to time, current allocations of a video data occupation bandwidth, an audio data occupation bandwidth and an EPG data occupation bandwidth;

multiplexing means for multiplexing the plurality of signals; and

control means for controlling a data output rate of the video encoding means, a data output rate of the EPG data generating means, and a multiplexing ratio among the video data, the audio data, and the EPG data in the multiplexing means to vary the occupation bandwidths of the video data, the audio data and the EPG data with time in relation to the transmission channel bandwidth and in accordance with the schedule database, the video and

audio data output rates being reduced when a temporarily higher EPG data output rate is to be accommodated.

30. (New) An information transmitting method for transmitting a plurality of signals via a transmission channel after multiplexing them, wherein the plurality of signals comprise a video signal, an audio signal and an electronic program guide (EPG) signal; and a schedule database defining, with respect to time, current allocations of a video data occupation bandwidth, an audio data occupation bandwidth and an EPG data occupation bandwidth, the method comprising

a video encoding step of encoding the video signal;

an audio encoding step of encoding the audio signal;

an EPG data generating step of generating EPG data;

a multiplexing step of multiplexing the plurality of signals; and

a control step of controlling a data output rate of the video encoding step, a data output rate of the audio encoding step, a data output rate of the EPG data generating step, and a multiplexing ratio among the video data, the audio data, and the EPG data in the multiplexing step to vary the occupation bandwidths of the video data, the audio data and the EPG data with time in relation to the transmission channel bandwidth and in accordance with the schedule database, the video and audio data output rates being reduced when a temporarily higher EPG data output rate is to be accommodated.

31. (New) A computer-readable recording medium having an executable program recorded therein, the program, when executed by a computer, causing an information

transmitting apparatus which transmits a plurality of signals after multiplexing them to execute an information transmitting method according to claim 30.

32. (New) An information receiving apparatus for receiving electronic program guide (EPG) data that is multiplexed at a controlled multiplexing ratio with a video signal and an audio signal by a method according to claim 30 and for displaying the EPG data together with the video signal, the information receiving apparatus comprising:

separating means for separating the EPG data that is multiplexed with the video signal and the audio signal;

storing means for storing the EPG data separated by the separating means; and

control means for controlling operations of the separating means and the storing means in accordance with a transmission rate of the EPG data,

wherein the control means is operative to control the operations of the separating means and the storing means so that the EPG data is acquired in a prescribed period when the transmission rate of the EPG data is temporarily higher.

33. (New) An information receiving method for receiving electronic program guide (EPG) data that is multiplexed at a controlled multiplexing ratio with a video signal and an audio signal by a method according to claim 30 and displaying the EPG data together with the video signal, the information receiving method comprising:

a separating step of separating the EPG data that is multiplexed with the video signal and the audio signal;

a storing step of storing the EPG data separated by the separating means; and

a control step of controlling operations of the separating step and the storing step in accordance with a transmission rate of the EPG data,

wherein the control step controls the operations of the separating step and the storing step so that the EPG data is acquired in a prescribed period when the transmission rate of the EPG data is temporarily higher.

34. (New) A computer-readable recording medium having an executable program recorded therein, the program, when executed by a computer, causing an information receiving apparatus which receives EPG data that is multiplexed at a controlled multiplexing ratio with a video signal and an audio signal and displays the EPG data together with the video signal to execute an information receiving method according to claim 33.

35. (New) A broadcasting system having an information transmitting apparatus according to claim 29 for transmitting EPG data after multiplexing it with a video signal and an audio signal and an information receiving apparatus according to claim 32 for receiving the EPG data that is multiplexed with the video signal and the audio signal and displaying the EPG data together with the video signal.

36. (New) An information transmitting apparatus for transmitting program information to an information receiving apparatus, the information transmitting apparatus comprising:

program information data generating means for generating program information data including information of a transmission status of the program information;

first multiplexing means for multiplexing an encoded video signal and an encoded audio signal to generate a multiplexed audio-video signal:

second multiplexing means for multiplexing the program information data with a multiplexed audio-video signal generated by the first multiplexing means to generate a signal to be transmitted to the information receiving apparatus; and

a controller operable to control the first and second multiplexing means to control the data rate of program guide data of the program information data,

wherein the transmission status information indicates availability of a predetermined transmission scheme for program guide data.

37. (New) An information transmitting apparatus according to claim 36, wherein the transmission status information comprises a predetermined transmission scheme version data.

38. (New) An information transmitting method for transmitting program information to an information receiving apparatus, the information transmitting method comprising:

a program information data generating step of generating program information data including information of a transmission status of the program information;

a first multiplexing step of multiplexing an encoded video signal and an encoded audio signal to generate a multiplexed audio-video signal;

a second multiplexing step of multiplexing the program information data with a multiplexed audio-video signal generated by the first multiplexing step to generate a signal to be

transmitted to the information receiving apparatus; and

a controlling step of controlling the first and second multiplexing steps to control the data rate of program guide data of the program information data,

wherein the transmission status information indicates availability of a predetermined transmission scheme for program guide data.

39. (New) A computer-readable recording medium having an executable program recorded therein, the program, when executed by a computer, causing an information transmitting apparatus to carry out a method according to claim 38.

40. (New) An information receiving apparatus operable to receive program information that comprises program information data multiplexed with a multiplexed audio-video signal, the multiplex audio-video signal being an encoded video signal multiplexed with an encoded audio signal, the information receiving apparatus comprising:

demultiplexing means for demultiplexing the program information; and

extracting means for extracting information of a transmission status of the program information that is included in the program information data demultiplexed by the demultiplexing means,

wherein the transmission status information indicates availability of a predetermined transmission scheme to acquire program guide data.

41. (New) An information receiving apparatus according to claim 40, wherein the transmission status information comprises predetermined transmission scheme version data.

42. (New) An information receiving method for receiving program information that comprises program information data multiplexed with a multiplexed audio-video signal, the multiplex audio-video signal being an encoded video signal multiplexed with an encoded audio signal, the information receiving method comprising:

a demultiplexing step of demultiplexing the program information; and

an extracting step of extracting information of a transmission status of the program information that is included in the program information data demultiplexed by the demultiplexing step,

wherein the transmission status information indicates availability of a predetermined transmission scheme for acquiring program guide data.

43. (New) A computer-readable recording medium having an executable program recorded therein, the program, when executed by a computer, causing an information receiving apparatus to carry out a method according to claim 42.